**CP204C: Introduction to GIS in City Planning**  
Spring 2017

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University of California Berkeley

**Course CCN:** 12028  
Tuesday/Thursday 3:30-5:00pm

**Instructors**  
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**Introduction**  
This course is designed for graduate students in City and Regional Planning or related disciplines. CP204c covers a range of GIS techniques used in planning. It focuses on the development of spatial models, beginning with simple vector based objects representing a sampled real world, through raster or cell based networks (often from remotely sensed imagery), to constrained vector line networks (solving location allocation problems), to more complex (and realistic) 3D surfaces. It reviews the impact that proximity and boundaries exert on spatial interaction and introduces concepts and models to solve spatial problems in both (urban) constrained and (landscape) unconstrained environments.

This course emphasizes the interplay of theory and application, with a dozen computer based homework assignments (all involving analyses using ArcGIS 10.4.1). Theory is introduced through lectures and assigned readings, while application is emphasized during in class exercises, homework assignments, and a final project.

The primary goal of this course is to provide students with the spatial theory, knowledge and applied skills to define, design and develop their own models to solve spatial problems in city and regional planning. The student will develop skills in spatial analysis that include: data discovery (Web based), database design and construction, spatial data integration, data rectification and projection, image processing and integration (at a basic level), spatial data model conversion, data management, modeling and data presentation (commonly referred to as mapping).

**Instructional Logistics**  
CP204c will meet twice a week. The Tuesday class time will consist of an opening lecture followed by introducing an applied project exercise, and a description of the homework assignment relative to the weekly topic. Students will begin their lab work in class after the lecture ends and are encouraged to work in small groups during the lab
session. Thursday will be devoted to the lab exercise and the homework assignment. Following each lab introduction (most often on a Tuesday), students have 6 days to complete a homework assignment on the same topic using techniques covered in the lab. These individual assignments will be submitted as a short report document in PDF format. All of the lab exercises use real data (some of it altered and dated) from local communities in the San Francisco Bay region. We will attempt to follow the Tuesday lecture, Thursday lab session format but this is subject to change given the complexity of the topics introduced.

There is a final applied group project where students will synthesize the information covered throughout the semester.

**Prerequisite**
Prior experience with GIS or desktop mapping is not required but a working knowledge of Micro Soft’s Windows operating systems (especially directory and file structure) is required. This hands on course is limited to 50 students due to the seats available in the classroom (214 Wurster Hall).

**Grading Criteria**
There will be no midterm or final examination in this course. Since the focus of the course is on building practical knowledge and the application of fundamental principles in spatial analysis, performance evaluation will be based almost entirely on your demonstrated understanding of the weekly homework assignments and the final project.

Grading break down:
- Lab assignments: 65%
- Final project: 30%
- Participation 5%

**Course Materials**

*Reading Material*
There is no required textbook, however I strongly suggest the reference text: *GIS fundamentals : A First Text on Geographic Information Systems*, 5th edition, by Paul Bolstad. This book is usually in the book store and can be purchased online.

Lecture slides and other readings will be posted online as downloadable PDFs.

*Laboratory Manual*
A laboratory manual will be put online as downloadable PDFs before each lab session.

*Software*
The main software system used in the laboratory will be ArcGIS version 10.4.1 by ESRI. The software is already loaded on all the computers in 214 Wurster, but if you would like to load it on your own computer, you can obtain a free license from a GSI the first week of class. The software runs under MicroSoft’s windows operating system. There is an
Apple option that will be discussed in class. Note, the graphic examples I use in lecture and in the laboratory exercises are most likely produced in a Windows 7 operating system on my MacBookPro laptop.

**Laboratory Access**
This course has limited enrollment. There are 50 computer workstations available during the laboratory session. Each student enrolled in the course is encouraged to purchase access for the semester. Forms are available in room 477 Wurster Hall. Access is 24 hours/day during the semester, only when another class is not assigned to this room. Computer Accounts are automatically assigned when you purchase access to the computer lab. Student computer accounts will be deactivated when laboratory keycard access is not current. It may be possible to complete the assignments on your own laptop but it is difficult for the GSIs to offer help and support on computers other than the ones in 214 Wurster Hall.

**Class Policies and Participation**
Class participation is based on each student’s contribution to class throughout the semester. While not a formal grading component, attending class and participating in lectures will influence your final grade. From time to time we will take attendance. If you are going to miss a class, notify your GSI via email before hand. You are responsible for any announcements made in class, even if you are absent.

Lab assignments are due at midnight, 6 days after the day they are assigned. The assignment will be submitted by posting it to bCourses before the due date. (*Note: we will institute a class assignment email account if we experience access issues on bCourses this semester*). If you are going to hand in an assignment late ... email the GSIs ahead of time. Each student will start with 3 grace periods (each worth 3 days) that can be cashed in at any time during the semester (only 1 grace period per lab assignment). A grace period **cannot** be applied to the final project.

To use a grace period:
1) Email the GSIs ahead of time, informing them that you will be using a grace period and specify the assignment it will be applied to.
2) You will be given a 3 day extension for each grace period.
3) You have only 3 grace period over the entire semester.
4) After you have used all of your grace period, there are no excuses for late assignments.
5) Lab assignments are graded out of 10. You will lose 1 point/day for late assignments.
Email Policy
My inbox receives between 50-200 emails per day. Checking my spam directory is a waste of time. In order to help me see your email, make sure the subject begins with: CP204C. See the example below.

The best way to solve your problems in this course: First email a GSI who will attempt to answer your question. If they cannot, they will forward your email to me and I will attempt to solve your problem. If it is an technical (IT) problem, there are consultants in the building who might be able to help and we will direct you to them.

Topics Covered

Making informative maps

GIS data structure; thematic mapping.
Database management; table operations.
Data presentation; map production.

Locating, integrating and representing objects in space

Digitizing, Georeferencing and building Topology.
Map Projections, metadata.
Discovering and gaining access to GIS Data.

Building models and solving problems using spatial analysis

Geoprocessing, vector-based suitability analysis.
Map algebra, raster-based analysis.

Adding constraints and a 3rd spatial dimension to GIS analysis

Network analysis, solving access and location-allocation problems.
Surface building, 3D surface representation and analysis.
Remote sensing and image analysis, extracting information and defining objects.